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EXAMINER	
RAMOS FELICIANO, ELISEO	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/028,571	RAJKOTIA
	Examiner	**Art Unit**
	Eliseo Ramos-Feliciano	2687

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 20 December 2001.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 March 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 8 and 15** are rejected under 35 U.S.C. 102(b) as being anticipated by Innes et al. (US Patent Number 6,061,565).

NOTE (applicable to all claims): Present application's nomenclature and Innes et al.'s nomenclature is different. Care should be taken not to confuse the variables used. For example, present application's "D" is defined as one way travel time (a measurement of time; see page 17, lines 5-11), in contrast with Innes et al.'s "D" which is defined as the distance between a base station BTS 26 and a mobile station MS 16 (a measurement of length; see column 4, lines 10-15). To define time Innes et al. uses "t" or "τ" (tau). Some of Innes et al.'s definitions relevant to present discussion are (see column 3, line 58 to column 4, line 15):

speed of light = c
transmission time = t0
arrival time = t3
delay = σ
one way travel time = $\frac{1}{2}(t3 - t0 - \sigma) = \frac{1}{2}(\tau 1 + \tau 2) = \tau 1 = \tau 2$
two way travel time = $\tau 1 + \tau 2 = t3 - t0 - \sigma$
distance from BTS to MS = D = $\frac{1}{2} c\,(t3 - t0 - \sigma)$

Regarding **claims 1 and 8**, Innes et al. discloses an apparatus and a base station including the apparatus (column 4, lines 49-50) for use in a wireless network communications system (Figure 4) including a plurality of base stations (BTS 26) and a plurality of mobile stations (MS

16) (column 2, lines 61-67; column 3, lines 15-20), the apparatus for determining a distance (Innes et al.'s "D") from a base station to a mobile station (column 3, lines 39-40; column 4, lines 14-16), the apparatus including:

a distance unit (MMSU 36 and/or PLC 38; see column 4, lines 42-43, 60-63) associated with said base station (BTS 26) wherein said distance unit is capable of determining a one way travel time ($\frac{1}{2}(t3 - t0 - \sigma) = \frac{1}{2}(\tau 1 + \tau 2) = \tau 1 = \tau 2$; see Figure 3) of a signal from said base station to said mobile station; and

wherein said distance unit is capable of multiplying said one way travel time by the speed of light (c) to obtain said distance ($D = \frac{1}{2} c (t3 - t0 - \sigma)$) from said base station to said mobile station (see column 4, lines 10-15).

Innes et al. explains in detail the invention at column 3, line 58 to column 4, line 16. With reference to Figure 3, a base station (BTS 26) starts transmission at an absolute time reference t0 (column 3, line 64-65). Mobile station (MS 16) receives the signal at a time t1 (column 3, line 65-66). A response from the mobile station to the base station is sent after a processing delay period σ at a time t2 (column 4, lines 2-7). The response is received at the base station at a time t3 (column 4, line 9). Consequently, one way travel time from the base station to the mobile station is $\tau 1 = t1 - t0$; and one way travel time from the mobile station to the base station is $\tau 2 = t3 - t2$. The delay period is $\sigma = t2 - t1$. On the assumption that the distance which may be traveled by the mobile station during the period σ is small then $\tau 1$ and $\tau 2$ are equal (one way travel time $= \tau 1 = \tau 2 = \frac{1}{2}(\tau 1 + \tau 2) = \frac{1}{2}(t3 - t0 - \sigma)$), while σ is small (column 4, lines 11-13). Therefore, if c is the speed of light, the distance from the base station to the mobile station is $D = \frac{1}{2} c (t3 - t0 - \sigma)$; see column 4, lines 14-16.

Regarding **claim 15**, Innes et al. discloses a method for use in a wireless network communications system (Figure 4) including a base station (BTS 26) and a mobile station (MS 16) (column 2, lines 61-67; column 3, lines 15-20), the method for determining a distance (Innes et al.'s "D") from the base station to the mobile station (column 3, lines 39-40; column 4, lines 14-16), the method including:

determining with a distance unit (MMSU 36 and/or PLC 38; see column 4, lines 42-43, 60-63) associated with the base station (BTS 26) a one way travel time ($\frac{1}{2}(t3 - t0 - \sigma) = \frac{1}{2}(\tau 1 + \tau 2) = \tau 1 = \tau 2$; see Figure 3) of a signal from the base station to the mobile station; and

multiplying the one way travel time by the speed of light (c) to obtain said distance ($D = \frac{1}{2} c (t3 - t0 - \sigma)$) from the base station to the mobile station (see column 4, lines 10-15).

Innes et al. explains in detail the invention at column 3, line 58 to column 4, line 16. With reference to Figure 3, a base station (BTS 26) starts transmission at an absolute time reference t0 (column 3, line 64-65). Mobile station (MS 16) receives the signal at a time t1 (column 3, line 65-66). A response from the mobile station to the base station is sent after a processing delay period σ at a time t2 (column 4, lines 2-7). The response is received at the base station at a time t3 (column 4, line 9). Consequently, one way travel time from the base station to the mobile station is $\tau 1 = t1 - t0$; and one way travel time from the mobile station to the base station is $\tau 2 = t3 - t2$. The delay period is $\sigma = t2 - t1$. On the assumption that the distance which may be traveled by the mobile station during the period σ is small then $\tau 1$ and $\tau 2$ are equal (one way travel time $= \tau 1 = \tau 2 = \frac{1}{2}(\tau 1 + \tau 2) = \frac{1}{2}(t3 - t0 - \sigma)$), while σ is small (column 4, lines 11-13). Therefore, if c is the speed of light, the distance from the base station to the mobile station is $D = \frac{1}{2} c (t3 - t0 - \sigma)$; see column 4, lines 14-16.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 2-6, 9-13 and 16-20 and 22-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Innes et al. (US Patent Number 6,061,565) in view of the Admitted Prior Art (cited hereinbelow).

Regarding **claims 2 and 9**, Innes et al. discloses everything claimed as applied above (see *claims 1 and 8*). In addition, the distance unit is capable of determining

one way travel time = 1/2 [(two way travel time) - (delay)], or

one way travel time = 1/2 [(t3 – t0) – (σ)]; (see Figure 3).

wherein the two way travel time is a time of travel for a range signal to travel from the base station to the mobile station and to travel from the mobile station to the base-station (explained in the preceding paragraphs).

However, Innes et al. fails to specifically disclose that the delay (σ) is a random backoff defined as a time value of a chip length of a random backoff parameter of the mobile station as defined by applicant.

Nevertheless, Innes et al. defines the delay σ as the period of time between reception of the signal from BTS at a time t1 until transmission of the response from MS back to BTS starts at a time t2 (column 4, lines 2-8). This is a signal processing delay (Figure 3). Then adds "an embodiment of the invention has been described above with reference to a GSM system, but it

should be noted that the invention is also applicable to other type of cellular mobile radio system, including CDMA and TDMA" (column 5, lines 63-66).

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 17, line 15 to page 18, line 22 teaches that the IS-95 CDMA standard (the "Standard") defines a random backoff as the time duration after which a mobile station starts transmission (page 18, lines 2-3) and equals a time value of a chip length (page 17, lines 18-19).

Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter, as suggested by Innes et al., in order to comply with the IS-95 CDMA standard, for the advantage of extending cellular mobile radio service to a greater number of customers.

Regarding **claims 3 and 10**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claims 2 and 9*). In addition, the distance unit is capable of obtaining the two way travel time by subtracting an arrival time (t3) of the range signal at the base station from the mobile station from a transmission time (t0) of the range signal from the base station to the mobile station (as explained in the preceding paragraphs; see column 3, line 64 to column 4, line 15).

Regarding **claims 4-5 and 11-12**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claims 2 and 9*). In addition, the Admitted Prior Art further teaches that in the IS-95 CDMA standard the random backoff parameter for the mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths; wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to choose the random backoff parameter for the mobile station with at a chip length value between 0 and 511 chip lengths and the time value for one chip length value at 813.8 ns, in order to comply with the IS-95 CDMA standard.

Regarding **claims 6 and 13**, Innes et al. discloses everything claimed as applied above (see *claims 1 and 8*). However, Innes et al. fails to specifically disclose obtaining the distance from the base station to the mobile station with a distance resolution of approximately 244-m.

Nevertheless, Innes et al. defines the delay σ as the period of time between reception of the signal from BTS at a time t1 until transmission of the response from MS back to BTS starts at a time t2 (column 4, lines 2-8). This is a signal processing delay (Figure 3). Then adds "an embodiment of the invention has been described above with reference to a GSM system, but it should be noted that the invention is also applicable to other type of cellular mobile radio system, including CDMA and TDMA" (column 5, lines 63-66).

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 17, line 15 to page 19, line 20 and page 21, lines 3-16, *inter alia*, teaches that the IS-95 CDMA standard (the "Standard") defines a random backoff as the time duration after which a mobile station starts

transmission (page 18, lines 2-3) and equals a time value of a chip length (page 17, lines 18-19). The duration of the random backoff can be one chip that equals 813.8 ns (page 17, lines 15-22). One chip length of 813.8 ns corresponds to a distance resolution of approximately 244-m (page 21, lines 10-12).

Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to obtain the distance from the base station to the mobile station with a distance resolution of approximately 244 m when replacing Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter, as suggested by Innes et al., in order to comply with the IS-95 standard, for the advantage of extending cellular mobile radio service to a greater number of customers.

Regarding **claim 16**, Innes et al. discloses everything claimed as applied above (see *claim 15*). In addition, the method further includes:

calculating the one way travel time from:

one way travel time = 1/2 [(two way travel time) - (delay)], or

one way travel time = 1/2 [(t3 – t0) – (σ)]; (see Figure 3).

wherein the two way travel time is a time of travel for a range signal to travel from the base station to the mobile station and to travel from the mobile station to the base station (explained in the preceding paragraphs).

However, Innes et al. fails to specifically disclose that the delay (σ) is a random backoff defined as a time value of a chip length of a random backoff parameter of the mobile station as defined by applicant.

Nevertheless, Innes et al. defines the delay σ as the period of time between reception of the signal from BTS at a time t1 until transmission of the response from MS back to BTS starts at a time t2 (column 4, lines 2-8). This is a signal processing delay (Figure 3). Then adds "an embodiment of the invention has been described above with reference to a GSM system, but it should be noted that the invention is also applicable to other type of cellular mobile radio system, including CDMA and TDMA" (column 5, lines 63-66).

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 17, line 15 to page 18, line 22 teaches that the IS-95 CDMA standard (the "Standard") defines a random backoff as the time duration after which a mobile station starts transmission (page 18, lines 2-3) and equals a time value of a chip length (page 17, lines 18-19).

Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter, as suggested by Innes et al., in order to comply with the IS-95 CDMA standard, for the advantage of extending cellular mobile radio service to a greater number of customers.

Regarding **claim 17**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 16*). In addition, the method further includes obtaining the two way travel time by subtracting an arrival time (t3) of the range signal at the base station from the mobile station from a transmission time (t0) of the range signal from the base station to the mobile station (as explained in the preceding paragraphs; see column 3, line 64 to column 4, line 15).

Regarding **claims 18-19**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 16*). In addition, the Admitted Prior Art further teaches that in the IS-95 CDMA standard the random backoff parameter for the mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths; wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to choose the random backoff parameter for the mobile station with at a chip length value between 0 and 511 chip lengths and the time value for one chip length value at 813.8 ns, in order to comply with the IS-95 CDMA standard.

Regarding **claim 20**, Innes et al. discloses everything claimed as applied above (see *claim 15*). However, Innes et al. fails to specifically disclose obtaining the distance from the base station to the mobile station with a distance resolution of approximately 244-m.

Nevertheless, Innes et al. defines the delay σ as the period of time between reception of the signal from BTS at a time t1 until transmission of the response from MS back to BTS starts at a time t2 (column 4, lines 2-8). This is a signal processing delay (Figure 3). Then adds "an embodiment of the invention has been described above with reference to a GSM system, but it

should be noted that the invention is also applicable to other type of cellular mobile radio system, including CDMA and TDMA" (column 5, lines 63-66).

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 17, line 15 to page 19, line 20 and page 21, lines 3-16, *inter alia*, teaches that the IS-95 CDMA standard (the "Standard") defines a random backoff as the time duration after which a mobile station starts transmission (page 18, lines 2-3) and equals a time value of a chip length (page 17, lines 18-19). The duration of the random backoff can be one chip that equals 813.8 ns (page 17, lines 15-22). One chip length of 813.8 ns corresponds to a distance resolution of approximately 244-m (page 21, lines 10-12).

Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to obtain the distance from the base station to the mobile station with a distance resolution of approximately 244 m when replacing Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter, as suggested by Innes et al., in order to comply with the IS-95 standard, for the advantage of extending cellular mobile radio service to a greater number of customers.

Regarding **claim 22**, Innes et al. discloses everything claimed as applied above (see *claim 15*). However, fails to specifically mention to determine the distance from the base station to the mobile station in less than ten seconds.

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 21, lines 4-6 teaches that the speed of light (c) is 299,792,458 meters per second.

Innes et al. suggests a maximum separation between base station and mobile station of 35,456 meters (column 4, lines 35).

Innes et al. taught that distance = (speed of light) (time). See column 4, line 14.

Therefore, time = (distance) / (speed of light).

Consequently,

time = (35,456 m) / (299,792,458 m/s)

time = 0.11827 ms ; for one way of travel (double for two way of travel).

Since processing delay = σ = 1.73076 ms ; see column 4, line 8.

Total time required to determine the distance is

= 2 x (0.11827 ms) + 1.73076 ms

= 1.96730 ms; i.e. roughly 2 milliseconds.

Therefore, it is clear that 2 milliseconds is less than ten seconds as claimed.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to obtain the distance from the base station to the mobile station in less than ten seconds, because such speed is desirable, and because it flows from mathematical manipulation given Innes et al. and the Admitted Prior Art suggestions of speed of light and separation between base station and mobile station.

Regarding **claim 27**, Innes et al. discloses an apparatus for use in wireless network communications system (Figures 4-5) including a plurality of base stations (BTS 26; BTS1-BTS3) and a plurality of mobile stations (MS 16), the apparatus for locating a mobile station in

an area (40 - Figure 5; column 5, lines 23-29) between three base stations (BTS1-BTS3 - Figure 5), the apparatus including:

a distance unit (MMSU 36) associated with each of the three base stations (MMSU for BTS1, MMSU for BTS2, MMSU for BTS3; column 5, lines 1-25) wherein the distance unit is capable of determining a one way travel time ($\frac{1}{2}(t3 - t0 - \sigma) = \frac{1}{2}(\tau 1 + \tau 2) = \tau 1 = \tau 2$; see Figure 3) of a signal from each respective station to the mobile station where

one way travel time = 1/2 [(two way travel time) - (delay)], or

one way travel time = 1/2 [$(t3 - t0) - (\sigma)$]; (see Figure 3).

wherein the two way travel time is a time of travel for a range signal to travel from each respective base station to the mobile station and to travel from the mobile station to each respective base station (see explanation hereinbelow);

wherein the distance unit is capable of multiplying each respective one way travel time by the speed of light (c) to obtain each respective distance (D1, D2, D3; $D = \frac{1}{2} c\,(t3 - t0 - \sigma)$) from each respective base station to the mobile station (column 4, lines 10-15); and

wherein the distance unit is capable of identifying a location (position) of the mobile station within the area between the three base stations using the respective distances of the mobile station from the respective base stations (column 4, lines 62-63 and column 5, lines 23-26).

Innes et al. explains in detail the invention at column 3, line 58 to column 4, line 16. With reference to Figure 3, a base station (BTS 26) starts transmission at an absolute time reference t0 (column 3, line 64-65). Mobile station (MS 16) receives the signal at a time t1 (column 3, line 65-66). A response from the mobile station to the base station is sent after a processing delay

period σ at a time t2 (column 4, lines 2-7). The response is received at the base station at a time t3 (column 4, line 9). Consequently, one way travel time from the base station to the mobile station is $\tau1 = t1 - t0$; and one way travel time from the mobile station to the base station is $\tau2 = t3 - t2$. The delay period is $\sigma = t2 - t1$. On the assumption that the distance which may be traveled by the mobile station during the period σ is small then $\tau1$ and $\tau2$ are equal (one way travel time $= \tau1 = \tau2 = ½ (\tau1 + \tau2) = ½ (t3 - t0 - \sigma)$), while σ is small (column 4, lines 11-13). Therefore, if c is the speed of light, the distance from the base station to the mobile station is $D = ½ c (t3 - t0 - \sigma)$; see column 4, lines 14-16.

For each one of the three base stations (BTS1, BTS2, BTS3 - Figure 5) a distance (D1, D2, D3) from each respective base station to the mobile station is determined using: $D = ½ c (t3 - t0 - \sigma)$; see column 4, lines 14, 60-67 and column 5, lines 1-29. D1, D2, D3 are processed to determined the location of the mobile station (column 4, lines 62-63 and column 5, lines 23-26).

However, Innes et al. fails to specifically disclose that the delay (σ) is a random backoff defined as a time value of a chip length of a random backoff parameter of the mobile station as defined by applicant.

Nevertheless, Innes et al. defines the delay σ as the period of time between reception of the signal from BTS at a time t1 until transmission of the response from MS back to BTS starts at a time t2 (column 4, lines 2-8). This is a signal processing delay (Figure 3). Then adds "an embodiment of the invention has been described above with reference to a GSM system, but it should be noted that the invention is also applicable to other type of cellular mobile radio system, including CDMA and TDMA" (column 5, lines 63-66).

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 17, line 15 to page 18, line 22 teaches that the IS-95 CDMA standard (the "Standard") defines a random backoff as the time duration after which a mobile station starts transmission (page 18, lines 2-3) and equals a time value of a chip length (page 17, lines 18-19).

Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter, as suggested by Innes et al., in order to comply with the IS-95 standard, for the advantage of extending cellular mobile radio service to a greater number of customers.

Regarding **claim 28**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 27*). In addition, the Admitted Prior Art discloses on page 21, lines 3-16 that for the duration of the random backoff equal to one chip = 813.8 ns (page 17, lines 15-22), this corresponds to a distance resolution of approximately 244-m (page 21, lines 10-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to obtain the location of the mobile station with a distance resolution of approximately 244-m in order to comply with the IS-95 standard, as suggested by Innes et al., and further to comply with FCC regulations.

Regarding **claim 29**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 27*). In addition, reading Innes et al.'s MMSU 36 and PLC 38 in combination as the claimed "distance unit", then the distance unit is capable of calculating a location of the mobile station from the respective distances of the mobile station from the respective base stations (see column 4, lines 41-67 and column 5, lines 1-29).

Regarding **claim 30**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 27*). In addition, the apparatus further includes:

a calculator unit (PLC 38) coupled to said three base stations (see Figure 4) but not located within said three base stations (column 4, lines 49-50), said calculator unit capable of receiving from said three base stations said respective distances of said mobile station from said respective base stations (column 4, lines 60-63);

wherein said calculator unit is capable of calculating a location of said mobile station from said respective distances of said mobile station from said respective base stations (see column 4, lines 41-67 and column 5, lines 1-29; see also claims 1 and 3 of Innes et al.).

Regarding **claim 23**, Innes et al. discloses a method for use in wireless network communications system (Figures 4-5) including a plurality of base stations (BTS 26; BTS1-BTS3) and a plurality of mobile stations (MS 16), the method for locating a mobile station in an area (40 - Figure 5; column 5, lines 23-29) between three base stations (BTS1-BTS3 - Figure 5), the method including:

determining with a distance unit (MMSU 36) associated with each of the three base stations (MMSU for **BTS1**, MMSU for **BTS2**, MMSU for **BTS3**; column 5, lines 1-25) a one

way travel time (½ ($t3 - t0 - \sigma$) = ½ ($\tau1 + \tau2$) = $\tau1 = \tau2$; see Figure 3) of a signal from each respective station to the mobile station where

one way travel time = 1/2 [(two way travel time) - (delay)], or

one way travel time = 1/2 [($t3 - t0$) – (σ)]; (see Figure 3).

wherein the two way travel time is a time of travel for a range signal to travel from each respective base station to the mobile station and to travel from the mobile station to each respective base station (see explanation hereinbelow);

multiplying each respective one way travel time by the speed of light (c) to obtain each respective distance (D1, D2, D3; D = ½ c ($t3 - t0 - \sigma$)) from each respective base station to the mobile station (column 4, lines 10-15); and

identifying a location (position) of the mobile station within the area between the three base stations using the respective distances of the mobile station from the respective base stations (column 4, lines 62-63 and column 5, lines 23-26).

Innes et al. explains in detail the invention at column 3, line 58 to column 4, line 16. With reference to Figure 3, a base station (BTS 26) starts transmission at an absolute time reference t0 (column 3, line 64-65). Mobile station (MS 16) receives the signal at a time t1 (column 3, line 65-66). A response from the mobile station to the base station is sent after a processing delay period σ at a time t2 (column 4, lines 2-7). The response is received at the base station at a time t3 (column 4, line 9). Consequently, one way travel time from the base station to the mobile station is $\tau1 = t1 - t0$; and one way travel time from the mobile station to the base station is $\tau2 = t3 - t2$. The delay period is $\sigma = t2 - t1$. On the assumption that the distance which may be traveled by the mobile station during the period σ is small then $\tau1$ and $\tau2$ are equal (one way

travel time = $\tau 1 = \tau 2 = ½ (\tau 1 + \tau 2) = ½ (t3 - t0 - \sigma)$), while σ is small (column 4, lines 11-13). Therefore, if c is the speed of light, the distance from the base station to the mobile station is $D = ½ c (t3 - t0 - \sigma)$; see column 4, lines 14-16.

For each one of the three base stations (BTS1, BTS2, BTS3 - Figure 5) a distance (D1, D2, D3) from each respective base station to the mobile station is determined using: $D = ½ c (t3 - t0 - \sigma)$; see column 4, lines 14, 60-67 and column 5, lines 1-29. D1, D2, D3 are processed to determined the location of the mobile station (column 4, lines 62-63 and column 5, lines 23-26).

However, Innes et al. fails to specifically disclose that the delay (σ) is a random backoff defined as a time value of a chip length of a random backoff parameter of the mobile station as defined by applicant.

Nevertheless, Innes et al. defines the delay σ as the period of time between reception of the signal from BTS at a time t1 until transmission of the response from MS back to BTS starts at a time t2 (column 4, lines 2-8). This is a signal processing delay (Figure 3). Then adds "an embodiment of the invention has been described above with reference to a GSM system, but it should be noted that the invention is also applicable to other type of cellular mobile radio system, including CDMA and TDMA" (column 5, lines 63-66).

The prior art admitted by applicant (the "Admitted Prior Art") disclosed on page 17, line 15 to page 18, line 22 teaches that the IS-95 CDMA standard (the "Standard") defines a random backoff as the time duration after which a mobile station starts transmission (page 18, lines 2-3) and equals a time value of a chip length (page 17, lines 18-19).

Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter, as suggested by Innes et al., in order to comply with the IS-95 standard, for the advantage of extending cellular mobile radio service to a greater number of customers.

Regarding **claim 24**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 23*). In addition, the Admitted Prior Art discloses on page 21, lines 3-16 that for the duration of the random backoff equal to one chip = 813.8 ns (page 17, lines 15-22), this corresponds to a distance resolution of approximately 244-m (page 21, lines 10-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to obtain the location of the mobile station with a distance resolution of approximately 244-m in order to comply with the IS-95 CDMA standard, as suggested by Innes et al., and further to comply with FCC regulations.

Regarding **claim 25**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 23*). In addition, reading Innes et al.'s MMSU 36 and PLC 38 in combination as the claimed "distance unit", then the method further includes:

providing the respective distances of the mobile station from the respective base stations to a distance unit (MMSU 36 and PLC 38) within one of the three base stations (column 4, lines 60-63); and

calculating in the distance unit a location of the mobile station from the respective distances of the mobile station from the respective base stations (see column 4, lines 41-67 and column 5, lines 1-29; see also claims 1 and 3 of Innes et al.).

Regarding **claim 26**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 23*). In addition, the method further includes:

providing the respective distances of the mobile station from the respective base stations to a calculator unit (PLC 38) not located within the three base stations (column 4, lines 49-50, 60-63); and

calculating in the calculator unit a location of the mobile station from the respective distances of the mobile station from the respective base stations (see column 4, lines 41-67 and column 5, lines 1-29; see also claims 1 and 3 of Innes et al.).

5. **Claims 7, 14 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Innes et al. (US Patent Number 6,061,565) in view of the Admitted Prior Art as applied to claims 2, 9, 16, respectively, above, and further in view of Krasny et al. (US Patent Application Publication Number 2003/0054845).

Regarding **claims 7 and 14**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claims 2 and 9*). However, they fail to specifically disclose that the distance unit is capable of adjusting a value of the two way travel time to correct a time

difference of a signal comprising one of: a multipath signal and a Doppler shifted signal, as claimed.

In the same field of endeavor, Krasny et al. discloses a method and apparatus for determining the time it takes for a signal to travel between two points. The time is used in positioning of mobile wireless receivers, including E-911 applications (see the abstract). To achieve accurate results and precise positioning of the mobile wireless receivers a multipath signal component is used for modifying (adjusting) the time it takes for the signal to travel between the two points (paragraph 0073).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to adjust the value of the two way travel time to correct a time difference of a multipath signal, in order to achieve accurate results and better precision of calculations, as suggested by Krasny et al.

Regarding **claim 21**, Innes et al. and the Admitted Prior Art disclose everything claimed as applied above (see *claim 16*). However, they fail to specifically disclose adjusting a value of the two way travel time to correct a time difference of a signal comprising one of: a multipath signal and a Doppler shifted signal, as claimed.

In the same field of endeavor, Krasny et al. discloses a method and apparatus for determining the time it takes for a signal to travel between two points. The time is used in positioning of mobile wireless receivers, including E-911 applications (see the abstract). To achieve accurate results and precise positioning of the mobile wireless receivers a multipath signal component is used for modifying (adjusting) the time it takes for the signal to travel between the two points (paragraph 0073).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to adjust the value of the two way travel time to correct a time difference of a multipath signal, in order to achieve accurate results and better precision of calculations, as suggested by Krasny et al.

Conclusion

6. Any inquiry concerning this communication from the examiner should be directed to Eliseo Ramos-Feliciano whose telephone number is 703-305-0078. The examiner can normally be reached from 8:00 a.m. to 5:30 p.m. on 5-4/9 1st Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid, can be reached on (703) 306-3016. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10-29-04

ELISEO RAMOS-FELICIANO
PATENT EXAMINER

ERF/erf
October 29, 2004.